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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/556,280	04/24/2000	Henry F. McInerney	L0532/7010	7997

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EXAMINER	
ROSENBERGER, RICHARD A	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/556,280	MCINERNEY ET AL.
	Examiner	Art Unit
	Richard A. Rosenberger	2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-23 and 87-124* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-23 and 87-124* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/9/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 12-23 and 86-124 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US 5,719,948) in view of Shaw (US 3,663,813), Falls (US 4,567,370), Stenzel et al (US 4,146,792) and Suzuki (US 4,202,491).

3. As independent claim 12, Liang shows an authentication device for authenticating a mark ("graphic images or characters or both"; abstract, lines 4) on a substrate, the mark being of any desired pattern and including a light-sensitive compound that, when irradiated with light, emits or absorbs light at a first wavelength ("graphic images and/or characters [which] have been previously made with fluorescent substances that may be invisible under ordinary visible light, but are rendered detectable by the ultraviolet light.", abstract. Lines 4-7). The device of Liang comprises a video mode comprising a video mode detector (40; "a photodiode array [or] a CCD camera" (column 6, lines 42-43), disclosed as producing a "conventional image detectable with visual-light illumination" (column 7, lines 59-61) for detecting an image of at least a portion of the substrate known to include the mark; and a video display (110) for displaying the image. The Liang reference also comprises a snapshot mode comprising a light for irradiating the substrate ("a source of UV light", abstract, lines 11-12), a snapshot mode detector (40; "capable of detecting fluorescent light from tested articles" (column 6, lines 42-44) for detecting light

emission or absorption of the light-sensitive compound in the mark after the mark has been irradiated, the snapshot mode detector providing data representative of the detected light emission or absorption of the light-sensitive compound in the mark. There is a processor (microcomputer 100) cooperating with at least the snapshot mode detector (40),

The Liang reference does not teach that the "processor processes the data independent of the pattern of the mark, the processor comparing the data that is independent of the pattern of the mark to a standard and rendering an authentication signal based on the comparison". It is known in the art to use fluorescent marks on the object for authenticating articles. Falls, Shaw and Stenzel et al show this. In Falls there is a mark on an object containing two light-sensitive compounds, which are detected and "[s]hould one or both of these selected characteristic radiations 50 and 52 be absent or of different wavelengths, one or both of the respective displays 28 and 30 becomes actuated, indicating a 'fail' for the just measured sample 12" (column 4, lines 8-12). Similarly, Shaw teaches a coded mark which is comprises a plurality of different light sensitive (fluorescent) compounds which are detected and compared to a standard to determine whether the object is encoded based on the characteristics of the fluorescence of the marks. Stenzel et al teaches providing papers to be authenticated fluorescent markers "at one or more points" that may comprise "a mixture of several substances producing fluorescence in a narrow band may advantageously be provided, and the mixture ratio may serve as an additional security." (column 6, lines 24-27). In all three the processing is not based upon the shape of the mark; Shaw is explicit : "the shape of the symbol marking area is immaterial" (column 1, line 24) and "[i]t is not necessary that the symbol have a particular shape, such as a number or letter" (column 1, line 25-26). Shaw also discloses that the marks may have a particular shape: ". . . the

coding component is also useful with . . . shaped symbols" (column 1, lines 27-28). Stenzel et al explicitly mentions the use of the ratio (quotient) of fluorescent peak wavelengths (column 8, lines 35-38), and teaches such a quotient has the advantages such as "dirt on the paper, variations in the brightness of the lamp" do not affect the measuring accuracy (column 8, lines 38-42).

It would have been obvious to included this known coding method of product authentification with the system of Liang by examining the emission spectrum of the marks in the manner taught by Falls, Shaw and Stenzel et al. This inclusion is not only known in the art, but is compatible with the marks and detection system taught by Liang. Liang teaches the marks may comprise a plurality of fluorescent materials ("[t]he process can also include printing fluorescent graphic images or characters with a multiplicity of fluorescent substances having distinct fluorescent wavelengths"; column 4, lines 43-46) as do the coded marks of Falls and Shaw, and teaches, as do Falls, Shaw, and Stenzel et al, separate detection of the different wavelengths ("[t]he system may also . . . optical filters to select predetermined wavelengths of fluorescent light"; column 4, lines 22-24 - note "filters" and "wavelengths" are both plural). It would have been obvious to include in the system of Liang because it is would provide an additional level of security in a known manner for its known purpose by adding an additional test of authenticity, the coded fluorescence, in a manner already largely provided for by the system of Liang and, as shown by the other references, otherwise known in the art for the purpose if authentication.

Liang does not teach using fluorescent materials that "when irradiated with IR light having a wavelength in the IR range, emits IR light having a first wavelength in the IR range". Liang does teach using marks that are invisible under normal lighting conditions: "the graphic

images and/or characters have been previously made with fluorescent substances that may be invisible under ordinary visible light, but are rendered detectable ["detectable" includes being detectable by the detection system] by the ultraviolet [i.e. excitation] light" (column 4, lines 11-14). Liang notes that "[i]t is known that documents may be authenticated by marking the documents with substances such as inks or dyes that appear invisible or relatively unnoticeable to the naked eye in ordinary visible illumination" (column 2, line 27-30), and notes that it is known to use "substances which fluoresce in the infrared portion of the electromagnetic spectrum" (column 2, lines 46-48). Shaw teaches infrared emission is possible (column 2, line 67). Stenzel et al teaches that the fluorescence may be in the infrared (abstract, line 3; column 1, line 59). Falls specifically disclose the use of a material that fluoresces in the infrared range (column 3, lines 49-51). It would have been obvious to use such infrared emitting fluorescent materials, which are invisible as the human eye cannot see the infrared emissions because, as Stenzel et al teaches, this use of invisible fluorescence can add to the security by making the marks unable to be recognized readily" (column 1, lines 52-55). These references do not, however, appear to teach the use of fluorescent materials that fluoresce in the infrared under infrared excitation. Suzuki teaches the use of fluorescent marks on a substrate using a fluorescent material that is both excited and fluoresces in the infrared (see, for example, abstract, column 1-3; column 2, lines 38-41). Suzuki teaches that this type of material is "very effective for preservation of secrecy and the prevention of forgery" (column 2, lines 44-47), and has the advantage that "an infrared light emitting diode of small size and long life can be used as an exciting source" (column 2, lines 51-53). In the device of Liang it is the fluorescence *per se*, and not the particular choice of excitation wavelength, that is of functional importance, and, given the knowledge in

the art, as illustrated by Suzuki, that infrared-infrared fluorescent materials are known, are known to be used for and known to be useful for such security marks, and bring with them the type of practical advantage mentioned by Suzuki, those in the art would have found it obvious to use such known infrared-infrared fluorescent materials for the marks of Liang.

4. Similarly for independent claim 90. As set forth above Liang teaches a fluorescent mark, which is a mark "including at least one light-sensitive compound that, when irradiated with light, emits or absorbs light at a first wavelength and at a second wavelength" ("[t]he process can also include printing fluorescent graphic images or characters with a multiplicity of fluorescent substances having distinct fluorescent wavelengths"; column 4, lines 43-46). As set forth above, Liang shows the claimed video mode and the claimed snapshot mode, and a processor. As set forth above, based on the teachings of Falls, Shaw, and Stenzel et al, it would have been obvious to examine the spectrum of the fluorescence of the marks provided by Liang, and based on the teachings of Suzuki it would have been obvious to use a fluorescent material that is excited by and emits infrared light. Stenzel et al teaches a known manner of using such fluorescent marks with a plurality of emission wavelengths for authentication is to form a ratio of the emission intensities at the two wavelengths (column 6, lines 24-27: "For rendering the forgery still more difficult, a mixture of several substances producing fluorescence in a narrow band may advantageously be provided, and the mixture ratio may serve as an additional security"; column 8, lines 35-38: "FIG. 5 shows a simple circuit with which ... the quotient between the photocurrents of two photocells is compared to definite maximum and minimum values and used to establish the authenticity"). It would have obvious to use this manner of authenticating the

fluorescent emission because, as taught Stenzel et al, this technique "has the advantage of affording increased safety because dirt on the paper, [and] variations in the brightness of the lamp ... do not affect the measuring accuracy" (column 8, lines 38-42).

5. Similar to claim 12 above for independent claim 108. As set forth above, Liang teaches a system of authenticating a fluorescent mark with both the claimed video and snapshot modes. As set forth above, based on the teachings of Falls, Shaw, and Stenzel et al, it would have been obvious to examine the spectrum of the fluorescence of the marks provided by Liang, and based on the teaching of Suzuki the use of fluorescent materials that are excited by and fluoresce in the infrared would have been obvious.

As discussed above for claim 12, Liang teaches using marks that fluoresce in the infrared and are thus are invisible under normal lighting conditions, as do Stenzel, Shaw, Falls, and Suzuki. As the detector in the snapshot mode is chosen to detect the emissions ("the detector may be capable of detecting both fluorescent images and normal visible images" (column 4, lines 24-26) and the detected image is displayed ("indicator 110 may display a processed image and/or a raw, unprocessed image of article 25 or indicia 26" (column 10, lines 19-26), the use of the fluorescent images that fluoresce in the infrared will be, as claimed, "invisible to the naked eye and the mark is viewable only on the snapshot display".

6. Stenzel et al claims "an evaluation unit connected to said photoelectric transducers and operable for comparing the emission values detected by said photoelectric receiving unit with predetermined desired values for checking the authenticity of papers" (claims 1; column 9, line

68 through column 10, line 5). It is at least obvious to have this checking done by the computer because this automates the procedure and reduces human error. For such computerized checking, the data, both the measured and the reference values against which the measured values are to be compared, must be stored in the computer (claims 13, 91, 109) in a format which the computer can read (claims 14, 92, 110); the Liang reference discusses storing the images obtained in digital form in computer memory (column 12, lines 44-49). If a permanent record is desired of the test, it would have been obvious to create one using film or the like to do so (claims 15, 93, 111). Time and date stamping is a common practice, well known in the art, and would have been obvious in order to maintain more complete records of the authentication (claims 16, 94, 112).

The Liang reference teaches the light may be a strobe lamp (column 5, line 39), which is a type of flash (claims 17, 95, 113). The Liang reference teaches that "[f]or some applications it is desirable to insert other optical filters 50 (not shown) into illumination portions 15 of optical path between sources 10 and/or 20 and beam splitter 30, to select portions of the UV and/or visible/IR spectra with which to illuminate article 25" (column 5, lines 63 through column 6, line 1) (claims 18, 96, 114). Selecting the filter to provide the wavelength appropriate for the particular mark, and arranging the filter to be changed to accommodate different types of marks with different fluorescent materials rather than having a different device for each possible type of mark, would have been obvious (claims 19, 97, 115).

Touch screens are known manners of entering data and commands into computers and computer controlled systems and it would have been obvious to use this known technique for its known purpose (claims 20, 98, 116). The particular manner in which the two images are displayed, both at the same time on a split screen, alternately, in color, etc., is a matters of

convenience; having both images on the screen at the same time, in a split screen format, would have been obvious because it would expedite the ability of the user to compare the two images in the manner taught by Liang (claims 21, 99, 117). When the snapshot mode is displaying the detected image of a mark that fluoresces in an invisible range, some color must be chosen to display the mark on the screen (claims 22, 100, 118). Making the images available in alternative, as well as, or instead of, the simultaneous view is another known manner of presenting images on a computer display, and would have been obvious (claims 23, 101, 119).

The camera of Liang detects the emitted light, and does so through a single optical path (claims 86, 102, 120). Making the instrument have working distances convenient to the particular application at hand would have been obvious (claims 87, 103, 121).

As discussed above in relation to claim 90, it would have been obvious to use the known technique of using marks with a plurality of emission wavelengths (claims 104, 105) and forming the ratio of the intensities of the wavelengths (claims 88, 123).

As set forth above, the art at least suggests that the mark can be "of any desired pattern and the data is independent of the pattern of the mark" (claim 122).

As discussed above, it would have been obvious to use a mark that fluoresces in an invisible range, such as in the IR range; those in the art, following the general teachings and suggestions of the art above, could choose a particular fluorescent material with its own particular emission wavelength (claim 124). Such infrared emitting wavelengths will be visible only in the snapshot display (claims 89, 107).

As set forth above in relation to claim 12, the fluorescent emission data is independent of the pattern of the mark, and the mark may be made of any desired pattern (claim 106).

7. Yoshinaga et al (US 5,763,891) mentions the use of fluorescent marks that are excited by infrared light and emit in the infrared; see column 18, lines 57-58 and column 36, lines 23-27. Andrus et al (US 5,093,147) discloses materials which fluoresce in the infrared under infrared excitation (abstract, lines 12-16), disclosed as being useful for providing "substantially invisible" markings on objects (column 1, lines 9-14), including for "security needs" (column 2, line 59).

8. The remarks and declaration filed 9 May 2005 have been considered. The remarks and declaration point out that the references previously applied do not excite the fluorescence with infrared light. See, however, the reference to Suzuki applied above, as well as the cited references to Yoshinaga et la and Andrus et al, which teach using infrared excitable fluorescent materials for marks to provide security to documents and the like.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
2 June 2005

Richard A. Rosenberger
Primary Examiner